Air Quality Permitting
Statement of Basis

July 12, 2006

Permit to Construct No. P-060019

Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix
Portable Truck Mix Concrete Batch Plant

Facility ID No. 777-00384

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

AACC	acceptable ambient concentration for carcinogens
acfm	actual cubic feet per minute
AIRS	Aerometric Information Retrieval System
cy/hr	cubic yard per hour
DEQ	Department of Environmental Quality
G & B	Americrete ready-mix concrete, inc., G & B Redi-Mix portable truck mix concrete batch plant
EI	emissions inventory
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
lb/day	pounds per day
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
T/yr	tons per year
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Americrete Ready Mix Concrete, Inc., G & B Redi-Mix portable truck mix concrete batch plant (G & B) is a Stephens Thoroughbred mobile gravity transit mix plant. The components of the plant are as follows: a two-compartment cement storage silo -60/40 split, one 14 cubic yard cement batcher, a four-compartment overhead aggregate bin, and one 12 cubic yard aggregate batcher. The plant combines sand, gravel, cement, and water to produce concrete. Electricity for the plant is supplied by the local electric utility.

The point source of emissions at the facility is C & W central dust collection system (C & W CPR-6500-H) which collects dust from cement silo, cement batcher, and truck mix loading. The material collected by the central dust collect is recycled to the production due to continuing increasing cement cost. The dust collect is qualified as part of the process in accordance with EPA's November 27, 1995, letter regarding *Criteria for Determining Whether Equipment is Air Pollution Control Equipment or Process Equipment.* Stephens' SV 20 Vent dust collector is a point source also. It is used to collect dust from the cement batcher as an emergency back-up (i.e. if the C & W CPR-6500-H dust collector isn't working properly). Another point source at the plant is a small boiler which is used to heat water during cold weather. The boiler is not an affected facility under the New Source Performance Standards (NSPS) of 40 CFR Part 60 Subpart Dc.

3. FACILITY / AREA CLASSIFICATION

G & B is not a major facility as defined in IDAPA 58.01.01.205, nor is it a designated facility as defined in IDAPA 58.01.01.006.26. The potential to emit of any criteria air pollutant is below 100 T/yr, and potential emissions rates for HAPs are below 25 T/yr collectively, and less than 10 T/yr for any single HAP. The primary Standard Industrial Classification (SIC) code for the facility is 3273. The facility is defined as a minor facility. The AIRS classification is "B."

The facility is a portable plant and may locate anywhere in the state of Idaho except for PM_{10} nonattainment areas.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant. This information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

G & B Redi-Mix has submitted a PTC application for a new portable truck mix concrete batch plant. This permit is the facility's initial permit.

4.1 Application Chronology

May 2, 2006	DEQ received PTC application.
May 22, 2006	The PTC application was determined complete.
June 1, 2006	Public notice for opportunity to comment was published.
July 6, 2006	Draft permit sent for regional review.
July 18, 2006	Draft permit sent to facility for review.

5. PERMIT ANALYSIS

This section of the statement of basis describes the regulatory requirements for this PTC action:

5.1 Equipment Listing

Table 5.1 contains the equipment listing and the emissions controls.

Table 5.1 EQUIPMENT LISTING AND EMISSIONS CONTROLS

Source Description	Emissions Control(s)
Concrete batch plant Manufacturer: Stephens manufacturing company Model: Thoroughbred portable batch Maximum throughput rate: 120 cubic yard of concrete per hour (cy/hr) The plant has the following major components: • Cement silo consists of two compartments – split 60/40 • 14 cubic yard cement batcher • 4 compartment aggregate bin • 12 cubic yard aggregate batcher	C & W central dust collection system: Manufacturer: C & W Manufacturing Co. Inc. Model: CPR-6500-H PM_{10} control efficiency: 99.99% stack parameters: Stack height: 7 ft 9 inch Stack opening: 14 7/16 inch x 19 1/6 inch or equivalent stack diameter of 1.56 ft. Exit air flow rate : 5,000 actual cubic feet per minute (acfm) Cement weight batcher safety/emergency dust collector: Manufacturer: Stephens manufacturing company Model: SV 20 Vent PM control efficiency: 99.96% stack parameters: Stack height: 27 ft 1/2 inch Stack opening: 10 inch x 13 inch or equivalent stack diameter of 1.07 ft. Exit air flow rate :+/- 500 (acfm)
Boiler: Natural gas fired Maufacturer: Pearson Model No.: P-10-20W Fuel Flow gas (maximum MMBtu/hr): 2.8	None

5.2 Emissions Inventory

Emissions inventory (EI) for the concrete batch plant was estimated by DEQ using emissions factors from AP-42 Section 11.12 (rev. 6/06) and production data provided in the application. For the boiler, emissions factors from AP-42 Section 1.4 (7/98) were used. Detailed EI can be found in Appendix B of the statement of basis. Table 5.2 provides a summary of the EI for criteria pollutants for the concrete batch plant. Table 5.3 provides a summary of the EI for criteria pollutants for the boiler.

Table 5.2 PM_{10}/PM MAXIMUM CONCRETE BATCH PLANT EMISSIONS WITH PERMITTED PRODUCTION LIMITS

Emissions Point	Emission Rate, Max.	Emission Rate, 24-hour average	Emission Rate, annual average
	lb/hr [1, 2]	lb/day[3]	T/yr[4]
Process Fugitive Emissions			
Aggregate delivery to ground storage	0.37	4.46	0.78
Sand delivery to ground storage	0.08	1.01	0.18
Aggregate transfer to conveyor	0.37	4.46	0.78
Sand transfer to conveyor	0.08	1.01	0.18
Aggregate transfer to elevated storage	0.37	4.46	0.78
Sand transfer to elevated storage	0.08	1.01	0.18
Facility Wide Total (Except for Road Dust)	2.40	28.82	5.00
Point Sources Emissions			
Total emissions from CPR-6500-H[5]	1.03	12.40	2.15
Emissions from SV 20 Vent[6]	0.46	5.47	0.95

[1] The EFs are taken from AP-42, Table 11.12-3 (version 10/01)
[2] Max. hourly rate = EF x Max. hourly production rate (Yd^3/hr)

[3] Hourly emissions rate, 24-hr average = Max.hourly emissions rate x proposed daily production / max. hour production rate / 24. Daily emissions rate = hourly emissions rate, 24-hr average x 24 hr/day.
[4] Annual average hourly emissions rate = Max hourly rate x proposed annual production rate/max. hourly production rate/8760 hr. Annual emissions rate = Annual average hourly emissions rate x 8760 hours/yr/(2000 lb/T)

[5] Per application, CPR-6500-H collects dust from cement silo, cement weigh batcher, and truck mix loading

[6] SV 20 Vent is the safety dust control vent in case CPR-6500-H is broke down.

Table 5.3 CRITERIA POLLUTANT MAXIMUM BOILER EMISSIONS

Source Description	PM_{10}[a]		CO[b]		NO_X[c]		SO_2[d]		VOC[e]	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler	0.021	0.09	0.231	1.01	0.275	1.20	.002	0.01	0.015	0.07

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[b] Carbon monoxide
[c] Oxides of nitrogen
[d] Sulfur dioxide
[e] Volatile organic compound

5.3 *Modeling*

The facility has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard with the permitted production limits. Lead emissions are below the modeling thresholds set forth in the *State of Idaho Air Quality Modeling Guideline*. Therefore, no modeling analysis was required for lead. DEQ conducted the facility ambient impact analysis by using DEQ's generic modeling approach for a portable truck concrete batch plant with the exception of considering the use of central dust collector system (CPR-6500-H) to control the emissions from truck mix loadout. The detailed modeling analysis is included in Appendix C. A summary of the modeling analysis is presented in Tables 5.3 and 5.4.

Table 5.3 FULL IMPACT ANALYSIS RESULTS FOR PM_{10}

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[c]	24-hour	50.2[d]	73	123.2	150	82
	Annual	15.4[e]	26	41.4	50	83

[a]Micrograms per cubic meter
[b]National ambient air quality standards
[c]Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[d]Maximum 6th highest modeled concentration from modeling a five-year meteorological data set
[e]Maximum 1st highest modeled concentration from modeling each of five years separately

Table 5.4 FULL IMPACT ANALYSIS RESULTS FOR TAPS

TAP	Averaging Period	Maximum Modeled Concentration (µg/m3)	AACC (µg/m3)	Percent of AACC
Arsenic	Annual	1.88E-4	2.3E-4	82
Beryllium	Annual	1.69E-5	4.2E-3	0.4
Nickel	Annual	7.44E-4	4.2E-3	18

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

This facility is proposing to build a brand new portable truck mix concrete batch plant and natural gas fired boiler. The proposed project does not qualify for an exemption under IDAPA 583.01.01.220 through 223 of the Rules; therefore, a Permit to Construction is required.

IDAPA 58.01.01.203.02 ..... National Ambient Air Quality Standards (NAAQS)
"*No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....02. NAAQS....*"

The facility has demonstrated compliance, to DEQ's satisfaction, that this project will not cause or significantly contribute to a violation of any ambient air quality standards of PM_{10}, and lead.

IDAPA 58.01.01.203.03 ..... Toxic Air Pollutants
"*No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....03. Toxic Air Pollutants Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*"

The controlled arsenic and nickel emissions exceed their respective net screening emissions level, but the predicted ambient impacts for arsenic and nickel controlled emissions comply with their respective acceptable ambient concentration (AACC) for carcinogens. The controlled beryllium emissions are less than its EL and the predicted ambient impact of uncontrolled beryllium emissions exceeds its AACC, but the predicted ambient impact of controlled beryllium emissions complies with its AACC. In accordance with IDAPA 58.01.01.210.08, the modeled controlled emissions rates of arsenic, beryllium, and nickel are required to be included in the permit as emissions limits. With the emissions limits, the

facility demonstrated compliance with IDAPA 58.01.01.203.03.

IDAPA 58.01.01.625 ..... Visible Emissions

This regulation states that any point of emission shall not have a discharge of any air pollutant for a period aggregating more than three minutes in any 60-minute period of greater than 20% opacity.

The emissions points at this facility are subject to this regulation.

40 CFR 60 ..... New Source Performance Standards

The facility is not subject to NSPS.

40 CFR 61 and 63 ..... National Emission Standards for Hazardous Air Pollutants & MACT

This facility is not subject to NESHAP or MACT.

5.5 *Permit Conditions Review*

5.5.1 Permit Condition 1.1 states the purpose for this permit action.

5.5.2 Permit Conditions 2.1 and 2.2 provide the plant process description and the emissions control description.

5.5.3 Permit Condition 2.3 sets the emissions limits for PM_{10}, Arsenic, Beryllium, and Nickel. With permitted daily production rate, the ambient impact from the plant does not exceed the PM_{10} 24-hour ambient air quality standard (NAAQS). The Arsenic, Beryllium, Nickel emissions are in particulate form and are controlled by the C & W central dust collection system. The controlled arsenic and nickel emissions exceed their respective net screening emissions level, but the predicted ambient impacts for arsenic and nickel controlled emissions comply with their respective AACCs. The controlled Beryllium emissions are less than its EL and the predicted ambient impact of uncontrolled Beryllium emissions exceeds its AACC, but the predicted ambient impact of controlled Beryllium emissions complies with its AACC. In accordance with IDAPA 58.01.01.210.08, the modeled controlled emissions rates of Arsenic, Beryllium, and Nickel are required to be included in the permit as emissions limits.

To demonstrate compliance with the emissions limits, the daily and annual concrete production rates are limited in Permit Condition 2.5, and the concrete production rates monitoring is required in Permit Condition 2.9. In Permit Condition 2.6, the dust collectors are required to operate in accordance with the O&M manual to ensure the control of the emissions.

5.5.4 Permit Condition 2.4 establishes the visible emissions limit for stacks, vents, and openings in the plant.

To demonstrate compliance with the visible emissions limit, the permittee is required to conduct monthly visible emissions inspection as specified in Permit Condition 2.10. The permittee is required to operate the dust collectors in accordance with the O & M manual in Permit Condition 2.6.

5.5.5 The permittee is required to control fugitive emissions as specified in Permit Conditions 2.7, 2.8 and 2.11.

5.5.6 Permit Condition 2.12 states that the plant cannot operate in any PM_{10} nonattainment area.

5.5.7 Permit Condition 2.13 requires the permittee to maintain records on site for the most recent two-year period and to make the records available to DEQ representatives upon request.

5.5.8 Permit Condition 2.14 requires the permittee to register the concrete batch plant whenever relocated.

5.5.9 Permit Condition 3.1 and 3.2 provides a process and emission control description for the boiler.

5.5.10 Permit Condition 3.3 establishes visible emissions limit.

5.5.11 Permit Condition No. 3.4 establishes grain loading limits for the boiler.

5.5.12 Permit Condition No. 3.5 allows the boiler to be operated exclusively by natural gas. Correspondence on fuel use is included in Appendix D.

5. PERMIT FEES

G & B submitted a $1,000 PTC application fee on May 2, 2006, in accordance with IDAPA 58.01.01.224. G & B's emissions increase is between 1 to 10 tons range. In accordance with IDAPA 58.01.01.225, the PTC processing fee is $2,500. The processing fee was paid on July 28, 2006.

Table 6.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	1.20	0	1.20
SO_2	0.0	0	0.0
CO	1.01	0	1.01
PM_{10}	2.29	0	2.29
VOC	0.0	0	0.0
TAPS/HAPS	0[a]	0	0
Total:	4.50	0	4.50
Fee Due	**$2,500.00**		

[a] TAP emissions change is included in the PM_{10} emissions change

6. PERMIT REVIEW

7.1 Regional Review of Draft Permit

DEQ's Boise Regional Office was provided the draft permit for review on July 6, 2006. The Boise Regional Office had five comments. The comments were addressed.

7.2 Facility Review of Draft Permit

The draft permit was sent to the facility for review on July 18, 2006. The facility did not have any comments.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from June 1, 2006, to June 30, 2006, in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for public comment period on DEQ's proposed action.

7. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that G & B be issued final PTC No. P-060019. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

TD/bf P-060019

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Appendix A

Permit to Construct No. P-060019

Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix Portable Truck Mix Concrete Batch Plant

Facility ID No. 777-00384

AIRS Information

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix
Facility Location: Portable
AIRS Number: 777-00384

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							U
PM_{10}	B						B	U
PT (Particulate)	B							
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

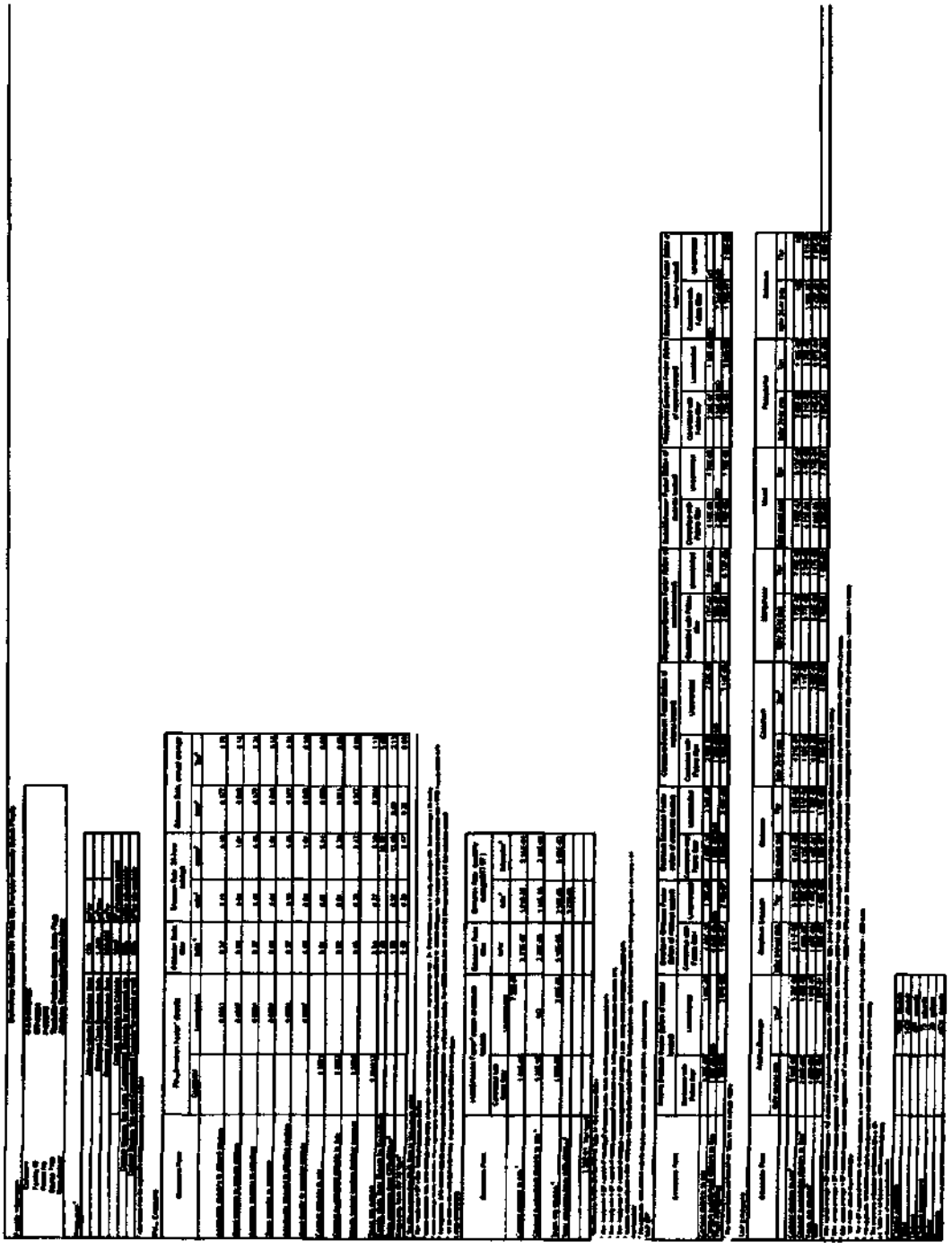
Permit to Construct No. P-060019

Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix
Portable Truck Mix Concrete Batch Plant

Facility ID No. 777-00384

Emissions Inventory

	A	B	C	D	E	F	G
1	Permitting worksheet for G&B Redi-Mix Natural Gas Fired Boiler						
2	Facility:	G&B Redi-Mix					
3	Permit No.:	P-060919					
4	Facility ID No.:	777-00394					
5	Emissions Unit:	Boiler No.1					
6	Rated Heat Input Rate:	2.5 MMBtu/hr					
7	Commenced construction modification, or reconstruction date in M/D/Y:						
8	Annual fuel consumption of this boiler (input a value or leave it as its default value.):			24	10^6 scf (heat input rate MMBtu/hr / heating value 102		
9	Type of boiler (input Y/N to each question)		"Y/N"?				
10	Is the boiler a large wall-fired boiler? (default)		n				
11	Is the boiler a tangential fired boiler?						
12							
13	Type of NO_x control (input Y/N to each question)				"Y/N"?		
14	Is this boiler NOx controlled?				n		
15							
16	Criteria Air Pollutants						
17		Emissions Factors (EFs)		Emissions			
18		lb/10^6 scf	lb/MMBtu	lb/hr	T/yr		
19	PM	7.6	0.0075	0.021	0.09		
20	PM_{10}	7.6	0.0075	0.021	0.09		
21	NO_x	100	0.0980	0.275	1.20		
22	CO	84	0.0824	0.231	1.01		
23	SO_2	0.6	0.0006	0.002	0.01		
24	VOC	5.5	0.0054	0.015	0.07		
25	Lead (Pd)	0.0005	0.0000	0.000	6.00E-06		
26	TAPs						
27	Cas No.	TAPS	Emissions Factors (EFs)[1]		Emissions	TAP EL[3]	Are emissions
28			lb/10^6 scf	lb/MMBtu	lb/hr	lb/hr	below EL? [5]
29	71-43-2	Benzene (HAP)	2.1 E-03	2.06 E-06	5.76E-06	8.00E-04	below
30	50-32-8	Benzo(a)pyrene [2]	1.2 E-06	1.18 E-09	3.29E-09	2.00E-06	below
31	50-00-0	Formaldehyde (HAP)	7.5 E-02	7.36 E-05	2.06E-04	6.10E-04	below
32	110-54-3	Hexane (HAP)	1.8 E+00	1.76 E-03	4.94E-03	1.20E+01	below
33	91-20-3	Naphthalene (HAP)	6.1 E-04	5.98 E-07	1.67E-06	3.33E+00	below
34	109-66-0	Pentane	2.6 E+00	2.55 E-03	7.14E-03	1.18E+02	below
35	108-88-3	Toluene (HAP)	3.4 E-03	3.33 E-06	9.33E-06	2.50E+01	below
36	7440-38-2	Arsenic (HAP)	2.0 E-04	1.96 E-07	5.49E-07	1.50E-06	below
37	7440-39-3	Barium	4.4 E-03	4.31 E-06	1.21E-05	3.30E-02	below
38	7440-41-7	Beryllium (HAP) [2]	1.2 E-05	1.18 E-08	3.29E-08	2.80E-06	below
39	7440-43-9	Cadmium (HAP)	1.1 E-03	1.08 E-06	3.02E-06	3.70E-06	below
40	7440-47-3	Chromium (HAP)	1.4 E-03	1.37 E-06	3.84E-06	3.30E-02	below
41	7440-48-4	Cobalt (HAP)	8.4 E-05	8.24 E-08	2.31E-07	3.30E-03	below
42	7440-50-8	Copper	8.5 E-04	8.33 E-07	2.33E-06	1.30E-02	below
43	7439-96-5	Manganese (HAP)	3.8 E-04	3.73 E-07	1.04E-06	3.33E-01	below
44	7439-97-6	Mercury (HAP)	2.6 E-04	2.55 E-07	7.14E-07	7.00E-03	below
45	7439-98-7	Molybdenum	1.1 E-03	1.08 E-06	3.02E-06	6.67E-01	below
46	7440-02-0	Nickel (HAP)	2.1 E-03	2.06 E-06	5.76E-06	2.70E-05	below
47	7782-49-2	Selenium (HAP) [2]	2.4 E-05	2.35 E-08	6.58E-08	1.30E-02	below
48	7440-62-2	Vanadium [4]	2.3 E-03	2.26 E-06	1.13E-05	3.00E-03	below
49	7440-66-6	Zinc	2.9 E-02	2.84 E-05	7.96E-05	6.67E-01	below
50	NA (PAH)	Benz(a)anthracene (HAP) <	1.80E-06	1.76 E-09			
51		Benzo(b)fluoranthene (HAP)<	1.80E-06	1.76 E-09			
52		Benzo(k)fluoranthene(HAP)<	1.80E-06	1.76 E-09			
53		Benzo(a)pyrene [2]	1.2 E-06	1.18 E-09			
54		Chrysene (HAP) <	1.80E-06	1.76 E-09			
55		Dibenz(a,h)anthracene (HAP)<	1.20E-06	1.18 E-09			
56		Indeno(1,2,3-cd)pyrene(HAP)<	1.80E-06	1.76 E-09			
57	Total PAH		1.14E-05	1.12E-08	3.13E-08	9.10E-05	below
58	[1] Correlation of Air Pollutant Emission Factors, AP-42 Section 1.4 Natural Gas Combustion (Rev. 3/98)						
59	[2] EF in AP-42 is listed as less than (<) the value listed in "Emissions Factors" column.						
60	[3] EL taken from IDAPA 58.01.01.585 or 586.						
61	[4] In IDAPA 58.01.01.585, the EL and AAC is for V (7440-62-2) expressed as V2O5 (1314-62-1). The Vanadium emissions rate is converted to V2O5 by: AP-42 emissions factor (lb/MMBtu) x heat input rate (MMBtu/hr) of V x (1 lbmol of V2O5 /2 lbmol of V) x (181.88 lb V_2O_5/ lbmol of V_2O_5) / (50.94 lb V/ lbmol of V) = lb/hr of V_2O_5. The calculated V_2O_5 rate is compared to EL taken from IDAPA 58.01.0.585.						
62	Total HAPs:	0.02 T/yr					
63	TAPs total:	0.05 T/yr					
64	The boiler meets grain loading standard per the calculation result from the Grain Loading Calc NG spreadsheet						
65	Average gross heating value of natural gas from AP-42, Section 1.4 (rev 7/98):			1020 MMBtu/10^6 scf NG			



Appendix C

Permit to Construct No. P-060019

Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix
Portable Truck Mix Concrete Batch Plant

Facility ID No. 777-00384

Modeling Review

MEMORANDUM

DATE: July 24, 2006

TO: Tracy Drouin, Air Quality Permitting Analyst, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT NUMBER: P-060019

SUBJECT: Modeling Review for the Americrete Ready-Mix Concrete, Inc. DBA - G&B Redi-Mix Permit to Construct Application for a new Portable Truck Ready-Mix Concrete Plant, Plant 3

1.0 Summary

Americrete Ready-Mix Concrete, Inc. DBA - G&B Redi-Mix (G&B) submitted a Permit to Construct (PTC) application for a portable truck ready-mix concrete batch plant. DEQ conducted air quality analyses involving atmospheric dispersion modeling of emissions associated with operation of the plant to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02).

The modeling analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility were below significant contribution levels (SCLs); or b) that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Impacts for the facility were based on generic modeling analyses conducted for a hypothetical facility, with impacts scaled by the proposed production rates.	Although the actual plant configuration may vary from that used for the generic modeling analyses, DEQ air modeling staff have determined the generic analyses appropriately represent impacts from facility operations.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The G&B facility will only be located in areas designated as an attainment or unclassifiable for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). Because there are no emissions of sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), or ozone (O_3) associated with operation of the ready-mix plant, the area classification for these pollutants has no impact on location restrictions for the plant.

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the ready-mix plant exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.91, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] (µg/m³)[b]	Regulatory Limit[c] (µg/m³)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[k]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[k]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[k]
	3-hour	25	1,300[j]	Maximum 2nd highest[k]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.91
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year
[g] Concentration at any modeled receptor
[h] Never expected to be exceeded more than once in any calendar year
[i] Concentration at any modeled receptor when using five years of meteorological data
[j] Not to be exceeded more than once per year

2.2 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Default rural/agricultural PM_{10} background concentrations of 73 µg/m³ for the 24-hour averaging period and 26 µg/m³ for the annual averaging period were used because ready-mix batch plants are typically located outside of urban areas.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 3 provides a summary of the modeling parameters used in analyses.

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1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling.* Memorandum to Mary Anderson, March 14, 2003.

Table 3. MODELING PARAMETERS		
Parameter	Description/Value	Documentation/Additional Description
Model	ISC-PRIME	ISC-PRIME version 04269
Meteorological data	1987-1991	Boise, Idaho, surface and upper air data
Terrain	Not Considered	Initial location of plant is effectively flat
Building downwash	Considered	The building profile input program (BPIP-PRIME) was used
Receptor grid	Grid 1	25-meter spacing along boundary out about 100 meters
	Grid 2	50-meter spacing out about 600 meters

[1]Universal Transverse Mercator

3.1.1 Modeling protocol and Methodology

DEQ conducted the modeling analyses; therefore, a modeling protocol was not submitted. Modeling was conducted using methods and data presented in the *State of Idaho Air Quality Modeling Guideline*.

A generic plant configuration for the ready-mix plant was used because of the potable nature of the facility. Emissions sources were located within a 20-meter by 20-meter area, and the ambient air boundary was assumed to be a 100-meter radius from the center of the emissions source area. Downwash from any buildings and equipment was accounted for by modeling effects from a 20-meter by 20-meter building, 10 meters high, centered on the emissions area.

3.1.2 Model Selection

ISC-PRIME was used by DEQ to conduct the ambient air analyses. ISC-PRIME utilizes the PRIME downwash algorithm that is superior to the downwash algorithm used in ISCST3. AERMOD, the dispersion model replacing ISCST3, also utilizes the PRIME downwash algorithm.

3.1.3 Meteorological Data

Boise, Idaho, meteorological data were used for the ambient air quality analyses since the plant is initially proposed for Ada County.

PCRAMMET, the meteorological data preprocessor for ISCST-3, occasionally generates unrealistically low mixing heights as a result of interpolation algorithms used with the twice daily measured mixing heights. The modeling analyses were conducted using meteorological data corrected for low mixing heights. All mixing height values below 50 meters were replaced with a value of 50 meters.

3.1.4 Terrain Effects

DEQ determined it would not be appropriate to consider terrain effects because the plant is portable and the topography of future plant locations cannot be reasonably anticipated. The proposed initial location of the plant is effectively flat for dispersion modeling purposes.

3.1.5 Facility Layout

A generic, hypothetical plant layout was used because of the portable and dynamic nature of the equipment used. A 20-meter by 20-meter building, 10 meters high, was located at the center of the facility. Table 4 describes the modeled locations of emissions sources.

Table 4. LOCATIONS OF EMISSIONS SOURCES				
Emissions Source - Description	Source Type	Source Location[a]		Size of Volume Source (meters)
		Easting Location (meters)	Northing Location (meters)	
SILO – baghouse, central dust collector[b]	Point	0	10	NA
AGG&SAN – aggregate/sand to/from storage pile	Volume	10	0	50 x 50 x 3
AGGTOST – aggregate/sand to elevated storage	Volume	10	10	5 x 5 x 10
TRUCKLO – uncaptured truck loading emissions	Volume	0	0	10 x 10 x 10

[a]The center of the facility is at 0 meters east and 0 meters north, located at the center of a 20 meter by 20 meter building
[b]Captures and controls emissions from silo filling, weigh hopper loading, and truck loading

3.1.6 Building Downwash

Potential plume downwash effects caused by structures and equipment potentially associated with the facility were accounted for in the modeling analyses by incorporating a 20-meter by 20-meter building, 10 meters high. The Building Profile Input Program for the PRIME algorithm (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for ISC-PRIME.

3.1.7 Ambient Air Boundary

The property boundary was assumed to be 100 meters from the center of the facility. DEQ assumed reasonable measures would be taken to ensure the general public are excluded from access to the property.

3.1.8 Receptor Network

The receptor grid used met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined the receptor grid was adequate to reasonably resolve maximum modeled concentrations.

3.1.9 Modeling Methodology

Generic modeling was conducted in support of permitting ready-mix concrete batch plants. This modeling assumed a throughput of 1,500 yd^3/day and 500,000 yd^3/year. Impacts for other throughput values are calculated by multiplying the generic modeling result by a ratio of potential throughput to 1,500 yd^3/day or 500,000 yd^3/year.

3.2 Emission Rates

Emissions rates used in the generic ready-mix concrete batch plant dispersion modeling analyses were based on emissions factors from EPA's AP-42 Section 11.12 (June 2006), Concrete Batching. Emissions estimates specifically for the G&B plant were based on maximum throughputs of 1,440 yd^3/day and 500,000 yd^3/year and were calculated by multiplying emissions rates for the generic modeling by a ratio of the potential throughput to the throughput used in the generic modeling (1,440/1,500 for 24-hour and 500,000/500,000 for annual).

Emissions estimates used in the G&B modeling analyses, generated from the generic ready-mix concrete batch plant modeling analyses and G&B-specific throughput values, vary somewhat from those calculated for the permit. This is primarily a result of rounding methods and slight differences between the emission factors used in the newer AP-42 Section 11.12 and the previous AP-42 Section 11.12. These differences will not substantially affect the results of the modeling analyses, and will not change the conclusions of the compliance demonstration.

3.2.1 Fugitive Dust Emissions from Sand and Aggregate Handling

The modeling of fugitive emissions from sand and aggregate handling are a function of wind speed, as indicated in EPA's AP-42, Section 13.2.4:

$$E = k(0.0032)\left[\frac{(U/5)^{1.3}}{(M/2)^{1.4}}\right]$$

E	=	PM_{10} Emission factor (lb/ton)
k	=	Particle size multiplier (0.35 for PM_{10})
U	=	Wind speed (miles per hour)
M	=	Material moisture content (percent)

AP-42 Section 11.12 (Ready-Mix Concrete Batch Plants) suggested moisture content values of 1.77 percent for aggregate and 4.17 for sand.

The base material handling emissions calculated for input to the model were based on a wind speed of 10 miles per hour (4.5 meters per second). Sand and aggregate handling emissions occur from three sources, including: 1) sand and aggregate to outside storage; 2) sand and aggregate from outside storage to conveyor; 3) sand and aggregate from conveyor to elevated storage. The first two sources types (sand and aggregate handling to the storage pile and handling from the storage pile to a conveyor) were grouped together for modeling purposes. Table 5 summarizes PM_{10} emissions from sand and aggregate handling for the generic modeling, at 1,500 yd^3/day and 500,000 yd^3/year throughput, and for calculating the G&B plant-specific modeling results.

Table 5. PM_{10} EMISSIONS FROM AGGREGATE AND SAND HANDLING

Criteria	Aggregate	Sand	Combined Sand and Aggregate
Base Emissions Factor	3.27E-3 lb/ton	9.86E-4 lb/ton	
Emissions for 1,500 yd^3/day-point	0.179 lb/hr	0.0440 lb/hr	0.223 lb/hr
Emissions for 1,440 yd^3/day-point	0.172 lb/hr	0.0422 lb/hr	0.214 lb/hr
AGG&SAN[a] daily rate	0.344 lb/hr	0.0845 lb/hr	0.429 lb/hr
AGGTOST[b] daily rate	0.172 lb/hr	0.0422 lb/hr	0.214 lb/hr
Emissions for 500,000 yd^3/year-point	0.164 lb/hr	0.0402 lb/hr	0.204 lb/hr
AGG&SAN[a] annual rate	0.328 lb/hr	0.0804 lb/hr	0.408 lb/hr
AGGTOST[b] annual rate	0.164 lb/hr	0.0402 lb/hr	0.204 lb/hr

[a] Includes two emissions points for sand and aggregate handling: 1) transfer to storage pile; 2) transfer to conveyor. Emissions for 1,440 yd^3/day throughput.
[b] Includes only transfer from conveyor to elevated storage. Emissions for 500,000 yd^3/year.

DEQ modeling used six emissions rates calculated at different wind speeds, then used an option within ISC to vary emissions as a function of wind speed. The base emissions calculated at 10 miles per hour were left unchanged, but adjustment factors were used as a function of wind speed for each hour modeled. ISC uses default wind speed categories with upper wind speeds in each category of 1.54 m/sec, 3.09 m/sec, 5.14 m/sec, 8.23 m/sec, and 10.8 m/sec. The sixth wind speed category does not have an upper bound.

Emissions were calculated for each category using the midpoint of the wind speed. For category 1, a lower bound of 0.0 m/sec was used, and for category 6 an upper bound of 14 m/sec was used. Table 6 shows the emissions adjustment factor for each wind speed category.

3.2.2 Total Facility Emissions

Table 7 and Table 8 list criteria emissions rates for sources included in the short-term and long-term dispersion modeling analyses, respectively. Emissions rates in the tables are representative of G&B operations of 1,440 yd^3/day and 500,000 yd^3/year. Emissions from silo filling, weigh hopper loading, and truck loading are captured and routed to the central dust collector baghouse. Uncaptured truck loading emissions were calculated by assuming 99.85 percent of uncontrolled emissions are captured, resulting in 0.15 percent of uncontrolled emissions at the truck loading point.

Table 6. WIND SPEED ADJUSTMENT FACTORS FOR SAND AND AGGREGATE HANDLING EMISSIONS

Wind Speed Category	Midpoint Wind Speed for Category (m/sec (mph))	Emissions Adjustment Factor[a]
1	0.77 (1.72)	0.101
2	2.32 (5.18)	0.425
3	4.12 (9.20)	0.897
4	6.69 (14.95)	1.69
5	9.52 (21.28)	2.67
6	12.4 (27.74)	3.77

[a]Applied to the base emissions or emissions factor calculated for a wind speed of 10 mph.

Table 7. MODELED EMISSIONS RATES FOR SHORT-TERM (24-HOUR AND LESS)

Source Id	Description	Emission Rate (lb/hr)[a] PM_{10}[b]
SILO	Central dust collector[c]	0.524
Fugitive Emissions Sources		
AGG&SAN	Aggregate/sand to/from storage pile[d]	0.429[f]
AGGTOST	Aggregate/sand to elevated storage[e]	0.214[f]
TRUCKLO	Truck loading	0.00790

[a]Pound per hour emissions
[b]Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c]Includes controlled emissions from cement and supplement transfer to the storage silo, weigh hopper loading, and controlled emissions from truck loading
[d]Includes two transfer points for both sand and aggregate
[e]Includes one transfer point for both sand and aggregate
[f]Emissions in the table are based on emissions calculated for a 10 mph wind speed; actual emissions will vary with wind speed as indicated in Table 6.

Table 8. MODELED EMISSIONS RATES FOR LONG-TERM (ANNUAL)		
Source Id	Description	Emission Rates (lb/hr)[a] PM10[b]
SILO	Central dust collector[c]	0.498
Fugitive Emissions Sources		
AGG&SAN	Aggregate/sand to/from storage pile[d]	0.408[f]
AGGTOST	Aggregate/sand to elevated storage[e]	0.204[f]
TRUCKLO	Truck loading	0.00751

[a]Pound per hour emissions
[b]Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c]Includes controlled emissions from cement and supplement transfer to the storage silo, weigh hopper loading, and controlled emissions from truck loading
[d]Includes two transfer points for both sand and aggregate
[e]Includes one transfer point for both sand and aggregate
[f]Emissions in the table are based on emissions calculated for a 10 mph wind speed; actual emissions will vary with wind speed as indicated in Table 6.

Table 9 lists applicable TAP emissions increases associated with the ready-mix concrete batch plant. Total TAP emissions of all other TAPs were below applicable screening emissions levels (ELs) and modeling was not required.

Table 9. TAP EMISSIONS RATES USED IN MODELING		
TAP	TAP Emissions Rate (lb/hr) SILO[b]	TRUCKLO[c]
Arsenic	2.08E-5	7.33E-8
Beryllium	1.87E-6	5.88E-9
Nickel	8.22E-5	2.87E-7

[a]Pounds per hour
[b]Includes controlled emissions from cement and supplement transfer to the storage silo and controlled emissions from truck loading
[c]Value for emissions not captured and controlled by the storage silo baghouse

3.3 *Emission Release Parameters*

Table 10 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity.

Table 10. EMISSIONS AND STACK PARAMETERS					
Release Point /Location	Source Type	Stack Height (m)[a]	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
SILO	Point	2.4	0.5	0 (ambient)	13.1
WEIGHOP	Point	8.4	0.3	0 (ambient)	2.8
Volume Sources					
Release Point /Location	Source Type	Release Height (m)	Initial Horizontal Dispersion Coefficient σ_{yo} (m)	Initial Vertical Dispersion Coefficient σ_{zo} (m)	
AGG&SAN	Volume	1.5	11.6	0.7	
AGGTOST	Volume	5	1.16	4.65	
TRUCKLO	Volume	5	2.33	4.65	

[a]Meters
[b]Kelvin
[c]Meters per second

3.4 Results for Significant and Full Impact Analyses

Compliance with NAAQS was demonstrated using full impact analyses. Results of preliminary significant impact analyses are not presented. Results of the full impact analyses are presented in Table 11.

Table 11. RESULTS OF FULL IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[c]	24-hour	50.2[d]	73	123.2	150	82
	Annual	15.4[e]	26	41.4	50	83

[a]Micrograms per cubic meter
[b]National ambient air quality standards
[c]Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[d]Maximum 6th highest modeled concentration from modeling a five-year meteorological data set
[e]Maximum 1st highest modeled concentration from modeling each of five years separately

3.5 Results for TAPs Analyses

Compliance with TAP increments were demonstrated by modeling controlled TAP emissions (those TAPs with emissions exceeding the EILs) from silo loading and truck loading operations. Emissions limits for modeled TAPs are needed in the permit, as per IDAPA 58.01.01.210.08.c, since impacts of controlled emissions were used to demonstrate compliance. Table 10 summarizes the ambient TAP analyses.

Table 13. RESULTS OF TAP ANALYSES

TAP	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	AACC ($\mu g/m^3$)	Percent of AACC
Arsenic	Annual	1.88E-4	2.3E-4	82
Beryllium	Annual	1.69E-5	4.2E-3	0.4
Nickel	Annual	7.44E-4	4.2E-3	18

[a]Micrograms per cubic meter

4.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any air quality standard.

Appendix D

Permit to Construct No. P-060019

Americrete Ready-Mix Concrete, Inc., G & B Redi-Mix
Portable Truck Mix Concrete Batch Plant

Facility ID No. 777-00384

Correspondence

Tracy Drouin

From: Rick Reed [RickReed@cableone.net]
Sent: Saturday, June 03, 2006 3:30 PM
To: Tracy Drouin
Subject: GB Redi-Mix

Tracy,

I spoke with John Green. He said, "definately we do not need to permit for diesel. This plant will run on Natural Gas Only."

There will be no need to permit for diesel. We will be using Natural Gas. Thanks so much.

Richard Reed
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8/1/2006